

Personal Information

Name	Orieb Abu-Alghanam
Place and date of birth	15, August, 1990
Faculty	King Abdulla II School for Information Technology
Department	Computer Science

Qualifications

Qualification	Specialization	University of donor rank	Date
BSc	Computer Engineering	University of Jordan	2013
MSc	Computer information systems	University of Jordan	2016
PhD	Computer Science	University of Jordan	2020

Specialization and domain of interest

Specialization	Networks and Information Security
Domain of interest	Cryptograph

Specialization and domain of interest**Title and abstract of the doctoral thesis (within 150 words)**

The Internet of Things (IoT) is a system of objects such as traditional computers, cameras, sensors and other things that are interconnected via a network to gather, process, and exchange context relevant data. Security is considered as one of the most important challenges facing IoT. Key distribution techniques are at the core of security provision and are critical components of any system in order to establish a secure connection between any two objects. In this paper a new Hierarchical Key Distribution (HKD) architecture and a set of Hierarchical Hybrid Key Distribution (H2KD) protocols are presented for IoT environment to support the provision of smart cities applications. The applicability of this protocols has been studied over HKD architecture and simulated using AVISPA tool and using Burrows–Abadi–Needham (BAN) logic. The targeted features of designing the architecture and the

protocols are supporting mobility, scalability, heterogeneity and supporting constrained nodes' limited capabilities. The performance of H2KD set of protocols has been evaluated based on a quantitative measure of several performance metrics including the memory storage, the computation cost for the constraint nodes, the number of messages exchanged and needed to establish a new session key for a mobile node. Scalability and resilience of the proposed protocols have been also measured. Simulation results show that H2KD protocols are safe against various attacks. Moreover, the analysis results show that the H2KD reduces communication, computation, and the storage costs for constraint nodes by 51.5% compared with related protocols. Additionally, H2KD has been found to provide more scalability and resilience than rival protocols.

Career Experience

Job Title	Place of work	Date
Lecturer	University of Jordan	2019
Assistant Professor	Al-Ahliyya Amman University/Networks and information security department	2021-2022
Member of the Board of Directors	Cyber Security Center at Al-Ahliyya Amman University.	2021-2022
Lecturer	University of Jordan	2022

Administrative works and committees

Administrative work and committee	Date

Recent Publications within last five years

Name of researcher	Research title, Publisher, Date
1	Oriebe Abu Alghanam, Wesam Almobaideen, Maha Saadeh, Omar Adwan, An improved PIO feature selection algorithm for IoT network intrusion detection system based on ensemble learning, <i>Expert Systems with Applications</i> , Volume 213, Part A, 2023, 118745, ISSN 0957-4174, https://doi.org/10.1016/j.eswa.2022.118745 .
2	AbuAlghanam, Oriebe, Hadeel Alazzam, Esra Alhenawi, Mohammad Qatawneh, and Omar Adwan. "Fusion-based anomaly detection system using modified isolation forest for internet of things." <i>Journal of Ambient Intelligence and Humanized Computing</i> (2022): 1-15. DOI: 10.1007/s12652-022-04393-9
3	AlazzamHadeel, AbuAlghanamOriebe, Al-zoubiQusay M., AlsmadyAbdulsalam and AlhenawiEsra'a. "A New Network Digital Forensics Approach for Internet of Things Environment Based on Binary Owl Optimizer" <i>Cybernetics and Information Technologies</i> 22, no.3 (2022): 146-160. https://doi.org/10.2478/cait-2022-0033
4	AbuAlghanam, O., Qatawneh, M., Almobaideen, W., & Saadeh, M. (2022). A new hierarchical architecture and protocol for key distribution in the context of IoT-based smart cities. <i>Journal of Information Security and Applications</i> , 67, 103173. DOI: 10.1016/j.jisa.2022.103173
5	Alazzam, H., AbuAlghanam, O., & Sharieh, A. (2022). Best path in mountain environment based on parallel A* algorithm and Apache Spark. <i>The Journal of Supercomputing</i> , 78(4), 5075-5094. DOI: 10.1007/s11227-021-04072-0
6	AbuAlghanam, O., Adwan, O., Al Shariah, M. A., & Qatawneh, M. (2022). Enhancing the Speed of the Learning Vector Quantization (LVQ) Algorithm by Adding Partial Distance Computation. <i>CYBERNETICS AND INFORMATION TECHNOLOGIES</i> , 22(2). DOI: 10.2478/cait-2022-0015
7	Alsharaiah, Mohammad A., Laith H. Baniata, Omar Adwan, Ahmad Adel Abu-Shareha, Mosleh Abu Alhaj, Qasem Kharmah, Abdelrahman Hussein, Oriebe Abualghanam, Nabeel Alassaf, and Mohammad Baniata10. "Attention-based Long Short Term Memory Model for DNA Damage Prediction in Mammalian Cells." <i>development</i> 13, no. 9 (2022).
8	Alghanam, O. A., Al-Khatib, S. N., & Hiari, M. O. (2022). Data Mining Model for Predicting Customer Purchase Behavior in E-Commerce Context. <i>International Journal of Advanced Computer Science and Applications</i> , 13(2). DOI: 10.14569/IJACSA.2022.0130249
9	Complex Nonlinear Behavior in Dynamic Biological Network . <i>International Journal of Interactive Mobile Technologies (iJIM)</i> , 16(12), pp. 32–51. https://doi.org/10.3991/ijim.v16i12.30467
10	AbuAlghanam, O., Albdour, L., & Adwan, O. (2021). Multimodal Biometric Fusion Online Handwritten Signature Verification using Neural Network and Support Vector Machine. <i>transactions</i> , 7, 8. DOI: 10.24507/ijcic.17.05.1691
11	Qatawneh, M., Almobaideen, W., & AbuAlghanam, O. (2020). Challenges of blockchain technology in context internet of things: A survey. <i>International Journal of Computer Applications</i> , 175(16), 13-20. DOI: 10.5120/ijca2020920660
12	AbuAlghanam, O., Qatawneh, M., al Ofeishat, H. A., Adwan, O., & Huneiti, A. (2017). A new parallel matrix multiplication algorithm on tree-hypercube network using iman1 supercomputer. <i>International Journal of Advanced Computer Science and Applications</i> , 8(12).

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Scientific conferences and symposia

Conference Title	Place and date of conference	Type of participation
Interdisciplinary Conference on Mechanics, Computers and Electrics	Barcelona, Spain, 2022	Participant
The 13th International Conference on Information and Communication Systems	Jordan, Irbid, 2022	Participant
IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT)	Jordan, Amman, 2019	Participant

Training courses

Name of course	Date
CCNA R&S	2022
NSE1, NSE2, NSE4	2021
Certified Ethical Hacker (CEH)	2022
Certified SOC analyst V1	2023
Penetration testing.	2022
Cybersecurity.	2020
Security +	2020
Artificial Intelligence Defence Technologies and Cyber Security Exhibition and Conference (AIDTSEC 2021)	2021
Kali Linux Workshop.	2021

VMware and Eve emulator Workshop.	2021
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Teaching activities

Taught Courses	Bachelor	Graduate
Encryption Theory.	◆	<input type="checkbox"/>
Cybersecurity.	◆	<input type="checkbox"/>
Networks and information security essentials. Networks Protocols Lab.	◆	<input type="checkbox"/>
Advance internet protocols.	◆	<input type="checkbox"/>
Computer networks	◆	<input type="checkbox"/>
Networks Protocols.	◆	<input type="checkbox"/>
Computer networks Lab	◆	<input type="checkbox"/>
Programming language (C++)	◆	<input type="checkbox"/>
Computer Skills	◆	<input type="checkbox"/>
Introduction to Software Engineering	◆	<input type="checkbox"/>

Membership in scientific and professional bodies and societies

Name and place of scientific body and society	Date

Awards

Name of Award	Donor and place of award	Date

